

## AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

### Listing of Claims:

1. (Presently amended) A tunable photonic bandgap structure, comprising a mode-selective photonic bandgap structure having a plurality of members, wherein at least one member is movable and wherein at least one member comprises metal, the photonic bandgap structure controlling electromagnetic radiation from a charged particle beam.
2. (Original) The tunable photonic bandgap structure of claim 1, wherein at least one of the plurality of movable members comprises a rectilinear structure.
3. (Presently amended) A temperature-controlled photonic bandgap structure, comprising a mode-selective photonic bandgap structure having a plurality of members, wherein at least one member is temperature controlled.
4. (Original) The temperature-controlled photonic bandgap structure of claim 3, wherein said at least one temperature-controlled member comprises a surface that is temperature controlled by contact with a fluid.
5. (Presently amended) A tunable, temperature controlled photonic bandgap structure, comprising a mode-selective photonic bandgap structure having a plurality of members, wherein at least one member is movable, and wherein at least one member is temperature controlled.
6. (Original) The photonic bandgap structure of claim 5, wherein said photonic bandgap structure comprises said plurality of members disposed in a multi-dimensional array.
7. (Original) The photonic bandgap structure of claim 6, wherein said multi-dimensional array is a periodic array.
8. (Original) An apparatus for providing mode-selected microwave radiation, comprising:
  - a vacuum electron device microwave generator creating microwave radiation having a plurality of modes; and
  - a temperature controlled photonic bandgap structure in communication with the vacuum electron device microwave generator to receive the microwave radiation and to select one of the

plurality of modes of the microwave radiation to be propagated, said photonic bandgap structure comprising a plurality of members disposed in a two-dimensional array wherein at least one member is temperature controlled.

9. (Original) An apparatus for providing mode-selected microwave radiation, comprising:

    a vacuum electron device microwave generator creating microwave radiation having a plurality of modes; and

    a tunable photonic bandgap structure in communication with the vacuum electron device microwave generator to receive the microwave radiation and to select one of the plurality of modes of the microwave radiation to be propagated, said photonic bandgap structure comprising a plurality of members disposed in a two-dimensional array wherein at least one member is movable.

10. (Original) An apparatus for providing mode-selected microwave radiation, comprising:

    a vacuum electron device microwave generator creating microwave radiation having a plurality of modes; and

    a tunable photonic bandgap structure in communication with the vacuum electron device microwave generator to receive the microwave radiation and to select one of the plurality of modes of the microwave radiation to be propagated, said photonic bandgap structure comprising a plurality of members disposed in a two-dimensional array wherein at least one member is movable, and wherein at least one member is temperature controlled.

11. (Original) An apparatus for providing mode-selected microwave radiation, comprising:

    a microwave generator means for creating microwave radiation having a plurality of modes; and

    a temperature controlled photonic bandgap means for receiving the microwave radiation and for selecting one of the plurality of modes of the microwave radiation to be propagated, said temperature controlled photonic bandgap means in communication with the microwave generator means.

12. (Original) An apparatus for providing mode-selected microwave radiation, comprising:

    a microwave generator means for creating microwave radiation having a plurality of modes; and

a tunable photonic bandgap means for receiving the microwave radiation and for selecting one of the plurality of modes of the microwave radiation to be propagated, said tunable photonic bandgap means in communication with the microwave generator means.